UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,923	12/22/2005	Shousheng He	47253-00061USPX	1771

27045 7590 09/04/2008

ERICSSON INC.
6300 LEGACY DRIVE
M/S EVR 1-C-11
PLANO, TX 75024

EXAMINER	
VLAHOS, SOPHIA	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
09/04/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,923	HE, SHOUSHENG	
	Examiner	Art Unit	
	SOPHIA VLAHOS	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-14* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/10/05,12/22/05* .
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 9, 11, 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheib DE 19606102A1 published on Aug. 21, 1997 (English language translation).

With respect to claim 1, Scheib discloses: providing a channel estimate of the communications channel based on said sequence of training symbols; (Fig. 2, and its description on page 9, lines 5-8, test data d correspond to the claimed training symbols, see page 10, lines 9-16, see the estimation of the channel coefficients h based on a training sequence) determining, based on the channel estimate, an estimate of a noise contribution introduced by said communications channel (Fig. 2, difference (error) term between y and z, and signal y is based on the channel estimate (block KM uses the channel estimate [h1, h2, hn] to generate term y) page 11, lines 6-10 (the communications channel has multipath interference), 24-31); and determining an estimate of the DC offset from the determined estimate of the noise contribution (Fig. 2, function of block LS (least squares) block that determines term c, this is the DC voltage (offset) coefficient, page 12, lines 17-30).

With respect to claim 2, Scheib further discloses: wherein the step of determining the estimate of the noise contribution comprises determining the estimate of the noise contribution from a difference between a number of received training symbols and corresponding expected training symbols based on the determined channel estimate (see Fig. 2, the error term e is a difference term between received training signal z, and model signal y (the model data y corresponds to the expected training symbols), see pages 10, lines 31-34, page 11, lines 1-6, this part relates to the model data y, and page 11, lines 24-31, comparison between antenna data of the training sequence and model data y).

With respect to claim 3, Scheib further discloses: wherein the step of providing the channel estimate comprises treating a potential DC offset as an uncharacterized interference contribution (Fig. 2, the error term e is the difference between the received and model signals is an uncharacterized interference contribution, and comprises channel, rotation, and a potential dc offset contribution).

With respect to claim 9, Scheib further discloses: wherein the communications signal comprises a signal in accordance with the GSM specifications (pages 4, lines 23-26, page 5, lines 19-22, the invention is applicable to GSM mobile radio systems).

With respect to claim 11, the limitations of claim 11 are rejected above in claim 1, and Scheib further discloses: an manipulating the communications signal to

compensate for the determined DC offset (Fig. 3, where c (the dc offset term) is subtracted from received communications signal page 10, lines 10-13, page 13, lines 7-17).

Claims 13-14 are rejected based on a rationale similar to the one used to reject method claim 1 since it recites means to implement the steps of claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scheib DE 19606102A1 published on Aug. 21, 1997 (English language translation).

With respect to clam 10, all of the limitations of claim 10 are rejected above in claim 1, but Scheib teaches GSM specifications instead of EDGE specifications. EDGE specification however is known in the art of wireless communications, EDGE or Enhanced Data Rates for GSM Evolution, is an evolution to GSM.

At the time of the invention, it would have been obvious to a person or ordinary skill in the art to modify the system of Scheib so that the communications signal comprises a communications signal in accordance with the EDGE specifications

so that the receiver of Scheib is used in new communications systems which use EDGE.

5. Claims 8, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheib DE 19606102A1 published on Aug. 21, 1997 (English language translation), as applied to claims 1 and 12 above, and further in view of Zvonar (U.S. 6,504,884).

With respect to claim 8, Scheib et al. do not expressly teach: wherein the method further comprises averaging the received communications signal over a received signal burst.

In the same field of endeavor (DC-offset calculation and compensation in GSM) Zvonar discloses: averaging the received communications signal over a received signal burst (Fig. 5, steps 202, and 204).

At the time of the invention, it would have been obvious to a person skill in the art to modify the system of Schein based on the teachings of Zvonar so that an initial DC offset in the received signal is removed (Zvonar, column 8, lines 50-59).

With respect to claim 12, Scheib further discloses: filtering the manipulated communications signal in an equalizer based on a channel estimate (see Fig. 3, after subtraction of the DC offset c, the received signal is supplied to DL block in addition to the determined channel estimate h (from training), page 13, lines 19-31 where equalization is performed in detector block DL).

The difference between Scheib and claim 12 is that Scheib teaches using the channel estimate from training for filtering, and not determining a channel estimate of the communications channel based on the manipulated communications signal; therefore the filtering of Scheib is not based on the determined channel estimate.

In the same field of endeavor, (DC-offset calculation and compensation in GSM), Zvonar teaches: determining a channel estimate of the communications channel based on a manipulated communications signal (see Fig. 1, block “estimate CIR” receiving a manipulated communications signal, i.e. the received signal with a DC offset removed, Column 3, lines 8-12); and filtering the manipulated communications signal in an equalizer based on the determined channel estimate, and the estimate of the CIR h hat is supplied to the equalizer, which equalizes the manipulated communications signal).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Scheib based on the teachings of Zvonar to obtain an accurate estimate of the channel (by using the manipulated communications signal, which has a DC offset removed) to estimate the channel impulse response, used by the equalizer.

6. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheib DE 19606102A1 published on Aug. 21, 1997 (English language translation), as applied to claims 1 and further in view of Luschi EP0954142, (published on 3/11/1999).

With respect to claim 5, Scheib further discloses: wherein the step of determining the channel estimate comprises determining a desired synchronization position of the sequence of training symbols with respect to a received signal burst of the communications signal (page 7, lines 20-22, where the determination of the channel estimate is performed simultaneously with synchronization process, described on column 12, lines 1-7).

However Scheib does not expressly teach: simultaneously determining a desired synchronization position of the sequence of training symbols with respect to a received signal burst of the communications signal and a desired size of an equalizer window of a channel estimation-based equalizer.

In the same field of endeavor, Luschi teaches: determining a channel estimate comprises simultaneously determining a desired synchronization position of the sequence of training symbols with respect to a received signal burst of the communications signal and a desired size of an equalizer window of a channel estimation-based equalizer (Fig. 1, block 11 channel estimation block, page 3 ¶0011]-[0015], page 5 lines 1-5 bit synchronization by searching a maximum energy, and block 13 in Fig. 1 performs channel truncation, to determine a desired size of the equalizer window, see ¶0008 on page 2 (pages 4-5 have a more detailed description).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system

With respect to claim 6, Luschi discloses: determining a number of channel estimates of the transmission channel as a function of the synchronization position and a size of the equalizer window (pages 2-3, ¶0006-0009, page 4, lines 1-5, truncation of channel impulse response (the size of the window, where every window includes a number of channel estimates (or channel taps as shown in Fig. 3) the length and position of the window are the variables (page 2, ¶0006, lines 40-42)) and determining the desired synchronization position and the desired size of the equalizer window by calculating an error measure based on the received signal burst and the determined estimates for a number of selected values of the synchronization position and of the size of the equalizer window (page 2, ¶0006 comparison of a cost function (error measure) with a threshold, see also ¶0009).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scheib DE 19606102A1 published on Aug. 21, 1997 (English language translation), in view of Luschi EP0954142, (published on 3/11/1999) as applied to claim 6 above, and further in view of Bahrenburg et al. (U.S. 6,606,314).

With respect to claim 7, the combination of Scheib and Luschi further includes: the step of determining the desired synchronization position and the desired size of the equalizer window by calculating an error measure based on the received signal burst

and the determined estimates for a number of selected values of the synchronization position and the size of the equalizer window comprises selecting the values of the size of the equalizer window between predetermined upper and lower bounds (page 2, line39-40, the upper and lower bounds of the window correspond to the initial discrete length of the initial CIR estimate).

Neither Scheib nor Luschi teach: the method further comprises determining the upper and lower bounds based on at least a desired size of the equalizer window as determined for a previously received signal burst

In the field of wireless communications, Bahrenburg teaches a length of burst should match the propagation channel so that a channel impulse response with a sufficient length is obtained (column 6, lines 31-48).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Scheib nor Luschi based on the teachings of Bahrenburg, so that when the propagation channel conditions remain the same, the upper and lower bounds (length) are the same as those of previously received training bursts.

Allowable Subject Matter

8. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOPHIA VLAHOS whose telephone number is (571)272-5507. The examiner can normally be reached on MTWRF 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SOPHIA VLAHOS/
Examiner, Art Unit 2611
9/3/2008

/Mohammad H Ghayour/
Supervisory Patent Examiner, Art Unit 2611